

## **SUMMARY OF THE DIAMOND LAKE RESTORATION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT**

### **CHANGES BETWEEN DRAFT AND FINAL**

The FEIS contains a number of refinements and clarifications based on comments received during the 45-day comment period, and as a result of on-going changes in the Pacific Northwest Region of the Forest Service (changes to the ACS, Survey and Manage Species, and status change of the coho salmon from Threatened to Sensitive). An additional alternative (Alternative 5) was developed in response to public comments and Alternative 4 was modified based on public comments. Each chapter documents the changes that occurred between draft and final. Each chapter in the FEIS documents the changes that occurred between draft and final.

For Chapter 1, commenters requested clarification on the measures and thresholds described for each element and additional relevant information regarding the Forest scale roads analysis. A minor correction was also made to the description of the required non-significant Forest Plan amendment.

For Chapter 2, in response to comments on the DEIS, a fifth alternative has been added to the FEIS and Alternative 4 has been modified to include recommended improvements. The project lifetime has been changed from six to seven years for all action alternatives. Requested additional details on fish carcass emulsification, the proposed rotenone treatment, and timing of fish stocking related to zooplankton recovery have been included. Revisions, additions and clarifications have been made to the summary tables and Best Management Practices section. The Final EIS describes Alternative 5 as the preferred alternative.

For Chapter 3, several changes to the FEIS occurred as a result of regional changes to the Northwest Forest Plan enacted in March of 2004. On March 22, 2004, the Secretaries of Interior and Agriculture signed the Record of Decision for the Northwest Forest Plan, amending the 1994 document with the decision to clarify provisions relating to the Aquatic Conservation Strategy (ACS ROD). The ACS ROD became effective immediately upon its signature. The primary changes made by the ACS ROD include the new provision that no finding of ACS consistency is required at the project level; and in order to comply with Riparian Reserve Standards and Guidelines that reference ACS objectives, the Forest must follow the procedures described in the ACS ROD. These procedures are found in the language amending page B-10 and page C-31 of the 1994 Northwest Forest Plan ROD.

On that same day the ACS ROD was signed, the Secretaries of Interior and Agriculture signed the Record of Decision to remove or modify the Survey and Manage mitigation measure Standards and Guidelines in the Northwest Forest Plan (S&M ROD). The S&M ROD became effective on April 21, 2004. The primary changes made by the S&M ROD include the elimination of portions of Survey and Manage Mitigation Measures for most species, the inclusion of some species onto the Regional Foresters Sensitive Species List (for Region 6). There is also more reliance on the other habitat conservation elements provided by the Northwest Forest Plan to conserve and protect species formally known as Survey and Manage.

In addition to the ACS ROD and S&M ROD signing on March 22, 2004, the R6 Regional Forester's Sensitive Species list has been updated twice since the publication of the DEIS: once on April 26, 2004 to incorporate former Survey and Manage Species as described above; and again on July 21, 2004 as a result of new information about a number of species. Changes in species status are detailed in the terrestrial vegetation and wildlife sections of Chapter 3; there are no anticipated impacts to species not previously described in the DEIS.

There have been a series of changes to the status of the Oregon Coastal coho Salmon that occurred during and subsequent to publication of the DEIS. Oregon Coast coho salmon had been listed as a threatened species under the Endangered Species Act since August of 1998, but a court ruling in February, 2004 rendered this listing unlawful and unenforceable by NOAA Fisheries. Following that ruling, NOAA Fisheries again proposed that Oregon Coast coho salmon be listed as a threatened species under the ESA based on an on-going reassessment of its status. This coho status review includes new information not previously considered in NOAA's first listing process (for which it lost in court). No changes in the alternatives occurred as a result of these changes in species designation. All findings previously documented in the DEIS are still relevant in the FEIS.

Other changes that occurred in this chapter of the FEIS in response to public comments on the DEIS include: addition of potential effects associated with Alternative 5; modifications of effects analysis resulting from changes that were made to Alternative 4 and information that became available after the DEIS was published; addition of effects analysis associated with implementation of contingency plans for all action alternatives; corrections, additions, and clarifications of other information requested by the public.

Chapter 4 has been revised since the publication of the DEIS to include the names of: additional IDT members participating in the project; additional members of the public who participated in meetings following the publication of the DEIS; and individuals receiving copies of the FEIS.

Chapter 5 was added to the FEIS. This chapter contains the responses to substantive comments received during the 45-day public comment period and a summary of public involvement that occurred after the comment period ended.

Appendix AA was added to include copies of the letters received from Federal, State, and Local governmental agencies, and elected officials, as required by FSH 1909.15, 24.1(3). Appendix BB and CC have been added and include requested additional details on monitoring, contingency plans, and activities designed to reduce tui chub reintroduction potential.

## ***CHAPTER 1- PURPOSE OF AND NEED FOR ACTION***

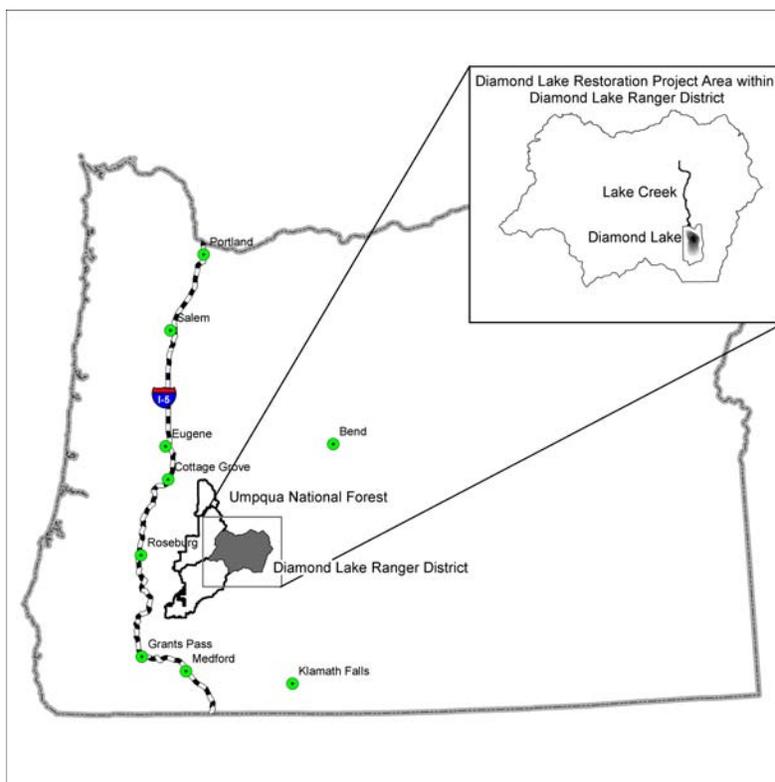
### **INTRODUCTION**

The purpose of this Diamond Lake Restoration Project Final Environmental Impact Statement (FEIS) is to document the environmental analysis that considers options for improving water quality and the recreational fishery following the expansion of a population of tui chub fish. The tui chub is a member of the minnow family that is not native to Diamond Lake.

Diamond Lake is a high use recreation destination considered important to the economy of southern Oregon. Originally fishless, the lake has been managed as a recreational trout fishery since 1910. Tui chub were introduced into the lake in the mid-1940's and rapidly overpopulated the lake. In 1954, the Oregon Game Commission constructed a canal near the Lake Creek outlet, lowered the lake level, and treated Diamond Lake with the fish toxicant, rotenone, to eradicate tui chub. The lake was restocked with trout following the successful rotenone treatment and a thriving fishery was maintained for several decades.

In 1992, tui chub were again discovered and have since overpopulated the lake for a second time. As the tui chub population grew during the 1990's, the recreational trout fishery declined dramatically. Now, tui chub are estimated to have an annual population of 7.6 million adults and over 90 million younger fish. This has led to ecological changes to Diamond Lake resulting in the dramatic decline in both water quality and the recreational fishery. Declines in water quality, in the form of toxic algae blooms, have forced lake closures to protect public health in the summers of 2001, 2002, and 2003.

The project area is located on the Diamond Lake Ranger District, Umpqua National Forest within the Umpqua River Basin (Figure S-1) and is bounded to the North by the North Umpqua River, to the South by Crater Lake, to the East by Mt. Thielsen, and to the West by Mt. Bailey.



**Figure S-1. Project Area Location on the Diamond Lake Ranger District, Umpqua National Forest.**

Negative impacts on the recreational fishery and on water quality in Diamond Lake and down stream prompted multiple local, state, and federal agencies to work cooperatively on solutions for the lake.

## **PURPOSE OF AND NEED FOR ACTION**

The Forest Supervisor of the Umpqua National Forest finds there is a need for improvement of Diamond Lake's water quality and recreational fishery. Eradication or control of the existing tui chub population is considered essential for accomplishing these objectives.

The difference between the existing conditions and the desired conditions defines the purpose and need for action in terms of elements that can be measured and analyzed. These elements are:

### ***Water Quality***

Diamond Lake currently does not meet Oregon State water quality standards, Umpqua National Forest Plan goals, or support the beneficial uses of the lake. Diamond Lake is included in the Oregon Department of Environmental Quality's (ODEQ) 303(d) list of water quality limited water bodies for pH and algae (ODEQ 2002). The beneficial uses for Diamond Lake that are currently negatively impacted by these water quality problems include: resident fish and aquatic life, water contact recreation, aesthetics, and fishing.

Annual monitoring data by ODEQ and others demonstrates that pH values exceeded standards during the summer season every year from 1992-2002. Similarly, annual monitoring data from 1992-2002 indicate that State standards for algae are not being met at Diamond Lake (JC Headwaters 2003). In the summers of 2001, 2002, and 2003, Diamond Lake experienced severe blooms of the cyanobacteria (blue-green algae) *Anabaena flos-aquae*. This type of algae produces a neurotoxin that in high concentrations is harmful to humans and other life. Another species of blue-green algae, *Microcystis aeruginosa*, was also present in the 2003 bloom. This species produces hepatotoxins which are also a health risk. To protect public health and safety, the Umpqua National Forest, in cooperation with the Douglas County Health Department, closed Diamond Lake to some public uses (wading, swimming, water skiing, and boating) during portions of all summers. Changes in lake ecology associated with overpopulation of the lake by tui chub are believed to be major contributing factors influencing the development of toxic algae blooms at Diamond Lake.

Diamond Lake is identified in the Umpqua National Forest Land and Resource Management Plan (LRMP) as a special management area (MA-2). As such, the lake is to be managed for concentrated developed recreation, favoring activities such as resort use, camping, picnicking, visitor information services, boating, fishing, interpretation and developed and dispersed winter sports (LRMP 1990, pgs. 110, 153). Summer-time lake closures due to degraded water quality are not compatible with MA-2 goals, are disappointing to some summer recreationists, and have negative economic impacts to some local businesses.

The desired condition for Diamond Lake is water quality that supports the beneficial uses of the lake and meets Forest Plan goals. The existing water quality conditions do not meet State standards, do not support beneficial uses of the lake, and do not meet

recreation management goals. Therefore, there is a need for improvement of water quality at Diamond Lake.

This element of the purpose and need is measured and displayed in the FEIS by expected levels of primary production, phytoplankton density, and blue-green algae production.

### ***Recreational Fishery***

The Diamond Lake recreational fishery does not currently meet State of Oregon management objectives or Umpqua National Forest Plan goals. For several decades, Diamond Lake has supported a large and popular recreational trout fishery that is important to the local and regional economy. No natural trout reproduction occurs in the lake, so the Oregon Department of Fish and Wildlife (ODFW) traditionally maintained the fishery in a cost-effective manner, primarily by stocking the lake each year with about 400,000 fingerling (about 3-inches in length) rainbow trout.

In recent years, the recreational fishery at Diamond Lake has declined dramatically from a high annual average harvest rate of about 270,000 trout averaging approximately 12-inches in size from 1963 to 1978, to a 1999 low annual harvest rate of 5,000 trout averaging less than 10-inches in length (ODFW, unpublished creel data). Failure of the formerly successful recreational fishery is attributed largely to changes in the ecology of the lake caused by the overpopulation by tui chub.

The desired condition for the recreational fishery at Diamond Lake as described in *current* State regulations is:

Diamond Lake shall be managed for hatchery production under the basic yield alternative of Oregon's Trout Plan (OAR 635-500-0703), which in summary states that the waters use their natural productivity to grow trout to a harvestable size with or without the addition of fingerling or yearly hatchery trout (OAR 635-500-0115).

Specific fish stocking strategies and harvest goals associated with these regulations are generated through an adaptive management process. Appropriate numeric goals for out-year stocking would be determined by ODFW using existing data and knowledge, ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), annual fish monitoring data and applicable nutrient loading allocations provided in Oregon Department of Environmental Quality's (ODEQ) pending Total Daily Maximum Load (TMDL) publication regarding the amount of acceptable pollutants in the lake.

The Umpqua National Forest Land and Resource Management Plan states that fishing is a recreational activity that will be supported through management activities at Diamond Lake. Many members of the public have expressed dissatisfaction with the current recreational fishing opportunities at Diamond Lake.

The desired condition for Diamond Lake is an ecologically sustainable recreational fishery that meets State management objectives and Forest Plan goals. The existing fishery meets neither. Therefore, there is a need for improvement of the recreational fishery at Diamond Lake.

This element of the purpose and need is measured and displayed in the FEIS by expected tui chub populations, trout body condition, and annual angler catch.

## **PROPOSED ACTION**

The Umpqua National Forest, in cooperation with multiple state and federal agencies, proposes to implement a series of actions that would meet the need for improvement of water quality and the recreational fishery at Diamond Lake. Proposed activities include: canal reconstruction, a fall/winter lake draw down, mechanical fish removal and utilization, a September rotenone (fish toxicant) treatment to eradicate tui chub, fish carcass removal and utilization, water management during lake refill period, monitoring, fish restocking, educational activities, and contingency measures for controlling tui chub if they are reintroduced to Diamond Lake in the future.

The proposed action would also include a non-significant amendment to the 1990 Umpqua National Forest Land and Resource Management Plan (LRMP). The amendment would allow the use of rotenone within Diamond Lake, Short and Silent Creeks, which would not normally occur under Standard and Guidelines Fisheries #6 (LRMP-33), Water Quality/Riparian Areas #8 (LRMP IV-60) and Prescription C2-I (LRMP 169-171).

## **DECISIONS TO BE MADE BASED ON THIS ANALYSIS**

Based on the analysis documented in this environmental impact statement, the Responsible Official will make the following decisions: to implement this project as proposed, to implement a modified version (alternative) of this project which addresses unresolved issues, or not implement this project at this time; to decide which management requirements, mitigation measures, monitoring and water quality best management practices are necessary to achieve resource goals, objectives, and the desired future condition; to amend the 1990 Umpqua National Forest Land and Resource Management Plan, as proposed; whether the proposed amendment would result in a significant change to the 1990 Umpqua National Forest Land and Resource Management Plan.

## **INTERAGENCY COOPERATION**

An interagency collaborative group, referred to as the Diamond Lake Project Working Group formed in October of 2001, hosted a technical forum in May of 2002, and has met nearly every month since July of 2002.

The working group is composed of Oregon State Representative Susan Morgan, US Fish and Wildlife Service, US Forest Service, US Environmental Protection Agency, Douglas County, Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, Oregon Water Resources Department, Oregon Economic and Community Development Department, and Oregon Division of State Land. These parties formalized their roles in a memorandum of understanding (MOU). Although not parties to the MOU, representatives of the National Oceanic and Atmospheric Administration and PacifiCorp also work cooperatively with the working group.

For the development of this Final Environmental Impact Statement (FEIS), another MOU was signed by three of the agencies, with the Forest Service as the lead agency

and ODFW and ODEQ as cooperating agencies in the EIS. ODFW has full authority to decide what fish stocking strategy would be utilized in Diamond Lake. Fish stocking is a State, not a Federal action. ODEQ, also a State agency, is the agency responsible for establishing appropriate nutrient allocation levels for fish stocking and all human-caused nutrient inputs into the lake.

## **SCOPING**

Public involvement to assist the Forest Service in developing the framework of the proposed action for the Diamond Lake Restoration project began in the fall of 2002. Public forums, presentations to special interest groups, electronic distribution of presentations, a technical meeting with actively interested publics, and multiple information mailings were all components of the early public involvement process for the project. The Confederated Tribes of Siletz, Cow Creek Band of Umpqua Indians, and Confederated Tribes of the Grande Ronde were each notified about the upcoming Diamond Lake project. The concerns and information raised from this early involvement process helped the Forest Service to formulate the proposed action.

Once the proposed action was developed, formal scoping began with publication of the Notice of Intent (NOI) and Proposed Action on April 25, 2003. Numerous area radio and television stations and newspapers published articles about the project. A public meeting soliciting scoping comments was held in Roseburg on May 27, 2003. Sixty-three letters were received during the formal scoping period. Comments ranged from: concern over whether fish should be stocked at all to the type of fish stocking; the likelihood of actually eradicating tui chub and the chances of a re-introduction; concerns over the effect of the proposed action on water quality in the lake and downstream; and concerns over the cost of implementing the project and not considering the other economic contributions of the lake beyond the trout fishery.

Members of the public made numerous suggestions for alternative treatment options for Diamond Lake. Some public recommendations were incorporated into action alternatives and some were considered, but eliminated from detailed study as described in Chapter 2.

## **SIGNIFICANT ISSUES**

Significant issues associated with a proposed action are the focus of an environmental impact statement because they provide the basis for formulating and comparing alternatives to the proposed action. Significant issues are based on unresolved conflicts concerning alternative uses of available resources. Issues are points of debate, dispute or disagreement over the effects of the proposed action.

Scoping identified a number of significant issues related to the proposed treatment of Diamond Lake. These issues, together with applicable laws, regulations, and policies, were used to develop alternatives. Issues expressed for the Diamond Lake Restoration Project and the measures for those issues are as follows:

- 1. Fish Stocking:** Some members of the public felt that certain fish stocking strategies, different from past or proposed strategies, may now be appropriate for use in the management of the recreational fishery at Diamond Lake because: they believe

past/proposed strategies have and would compromise water quality in the lake; or they believe different fish species would make better predators on tui chub than rainbow trout. This issue is measured by comparing the ODFW management strategy and the fish species mix associated with each FEIS alternative.

**2. Non-target Species:** Some members of the public expressed a concern that rotenone treatment would kill non-target fish and wildlife species (i.e. amphibians, aquatic insects, rainbow trout) in Diamond Lake and could have negative impacts on other fauna in the Diamond Lake food chain (i.e. bald eagles, waterfowl, river otters). In addition, there were concerns about the potential negative effects on non-target species in Lake Creek, Lemolo Lake, and the North Umpqua River system if rotenone treated water escaped Diamond Lake through Lake Creek or groundwater. This issue is measured by an assessment of the expected effects on bald eagles and coho salmon, both listed or proposed under the Endangered Species Act.

**3. Water Quality:** Some members of the public were concerned that a lake draw down would affect downstream water quality; that rotenone would affect water quality downstream and in wells near the lake; and that the combination of rotenone followed by fish stocking would affect water quality by affecting the lake's food chain. This issue is measured by assessing the expected levels of pH, aquatic plant growth (primary production), blue-green algae toxins, zooplankton population structure and risk of well contamination.

**4. Wetland Ecology:** Some members of the public expressed concern that the proposed draw down could affect wetlands adjacent to the lake and the flora and fauna associated with them. In addition, there were public concerns over the potential effects of the draw down on the condition of Lake Creek. This wetland issue is measured in the FEIS by assessing the expected acres of wetlands temporarily dewatered; the expected changes in Lake Creek's channel morphology; and the effects to rare plant communities.

In addition to the measures used to track the above significant issues, eight other issues (those that did not drive additional alternatives) are displayed and assessed in the FEIS. These issues include Diamond Lake's historically fishless condition, impacts on indigenous fish species, likelihood of tui chub reintroduction, human health risks, economics, recreation, water rights, and tui chub transport into Lemolo Lake. Moreover many other aspects of physical, biological, and social environment are assessed and disclosed in the FEIS in order to meet current regulations and policy regarding the National Environmental Policy Act.

## ***CHAPTER 2 – ALTERNATIVES, INCLUDING THE PROPOSED ACTION***

Five alternatives for the Diamond Lake Restoration Project are considered in detail. The National Environmental Policy Act (NEPA) requires analysis of a proposed action and other reasonable alternatives, including no action. The no action alternative provides a baseline for estimating environmental effects. The additional action alternatives were developed following extensive public outreach and interagency coordination in response to the issues identified. In response to scoping, 24 additional

alternatives were considered, but eliminated from detailed study due to prohibitive costs, inconsistency with regulatory requirements, or lack of feasibility or effectiveness. These are described at the end of Chapter 2.

## **ALTERNATIVES CONSIDERED IN DETAIL**

### **Alternative 1 (No Action)**

This alternative serves as the baseline for estimating environmental effects of the action alternatives. No canal reconstruction, lake draw down, mechanical fish harvest, chemical treatment, fish carcass removal, or lake refill would occur. No active measures to improve water quality at Diamond Lake would be implemented. Potentially harmful algae blooms and lake closures would be expected to continue.

ODFW would continue with the existing experimental fish stocking program (100,000 fish) in 2004 and 2005. In 2006, ODFW and the Oregon Fish and Wildlife Commission (OFWC) would revisit the Diamond Lake Fishery Management Plan to determine appropriate stocking. Based on current knowledge and budget, it is expected that ODFW would stock Diamond Lake with 24,000 legal sized rainbow trout on annual basis in 2006 and beyond.

### **Alternative 2 (Proposed Action)**

The Umpqua National Forest, in cooperation with multiple state and federal agencies, proposes to implement a series of actions that would meet the need for improvement of water quality and the recreational fishery at Diamond Lake.

**Canal Reconstruction:** A blocked and debris-filled existing earthen canal that connects Diamond Lake to Lake Creek would be reconstructed to facilitate a lake draw down. The portion of the canal within Diamond Lake would be dredged to its original depth using a floating suction dredge or other appropriate equipment. Dredge spoils would be used to expand an existing wetland. From the lakeshore to the canal outlet, the canal would be excavated to its original configuration and fitted with a new head-gate structure to control water flow. If necessary, new bridges or culverts would be constructed over the canal to maintain access to the bike trail and summer homes using Forest Service Road 4795.

**Fall/Winter Lake Draw Down:** Diamond Lake's water level would be lowered by eight feet from its normal summer level using both the reconstructed canal and Lake Creek for water transport. The lake draw down would begin on or around September 15 in the year prior to a chemical treatment. A gravity-driven draw down would occur at a discharge rate approximating a bankfull flow in Lake Creek.

**Mechanical Fish Removal and Utilization:** Several methods would be used to remove and utilize fish from Diamond Lake prior to chemical treatment including: liberalizing catch limits on fishing at the lake; harvest of fish by individual crews using traps, nets and seines; and harvest of fish through commercial fishing operations. Harvested fish carcasses would be converted to an organic fish emulsion product on site (lake shore) or trucked to an off-site plant for utilization as fertilizer.

**September Rotenone Treatment:** The powdered formulation of the fish toxicant rotenone would be applied to Diamond Lake in September (about a year after the lake draw down begins). This would happen when water temperature and chemistry reached conditions considered optimal for achieving a complete fish kill. Rotenone would be administered according to label instructions at the necessary amounts based on water volume, temperature, and chemistry in Diamond Lake at the time of application. Sections of Silent Creek and Short Creek would also be treated with liquid rotenone.

**Non-Significant Forest Plan Amendment:** The proposed action would include a non-significant amendment to the 1990 Umpqua National Forest LRMP. The amendment would allow the use of rotenone within Diamond Lake, Short and Silent Creeks, which would not normally occur under Standard and Guidelines Fisheries #6 (LRMP IV-33), Water Quality/Riparian Areas #8 (LRMP IV-60) and Prescription C2-I(LRMP IV-169-171). The non-significant Forest Plan Amendment (Amendment #5) would apply to this project only; upon completion of the project, Standard and Guidelines Fisheries #6, Water Quality/Riparian Areas #8 and Prescription C2-I would again apply to Diamond Lake, and Short and Silent Creeks.

**Mechanical Fish Carcass Removal and Utilization:** A commercial fishing or professional fish mortality recovery and recycling operation would be employed to collect fish carcasses following a chemical treatment of the lake. Fish carcasses would be converted to an organic fish emulsion product on site or trucked to an off-site plant for utilization as fertilizer.

**Water Management during Lake Refill Period:** An active water management strategy would be implemented to limit the length of time that Lake Creek is reduced to no or very low flows. When water in Diamond Lake becomes suitable for release (about November), canal headgates would be opened to allow approximately 10 cubic feet per second (cfs) of water to flow into Lake Creek and through the North Umpqua River system.

**Monitoring:** A variety of monitoring activities would be used to verify assumptions, evaluate project success, and formulate appropriate lake management strategies including: stream flows and water quality in Lake Creek; water quality in Diamond and Lemolo Lakes and the North Umpqua River; tui chub presence; and phytoplankton, zooplankton and benthic invertebrate and trout populations.

**Fish Restocking Strategy:** ODFW would pursue approval for a change to the following strategy for restocking Diamond Lake through the Oregon Fish and Wildlife Commission (OFC) and the appropriate public process.

Diamond Lake would be restocked with fish using an ecologically sustainable stocking strategy. The Oregon Department of Fish and Wildlife would manage the lake for hatchery production under the Basic Yield Alternative of Oregon's Trout Plan. However, ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), existing data and knowledge, annual fish monitoring data and applicable nutrient loading allocations provided in ODEQ's pending Total Maximum Daily Load (TMDL) publication would be used to determine appropriate numeric goals for annual fish stocking and harvest post-project.

Under this stocking strategy, it is expected that conservatively small numbers of fingerling "Fishwich" or Oak Springs rainbow trout and legal and/or trophy sized predacious fish species (Eagle Lake rainbow trout, brown trout, or spring Chinook) would be introduced into Diamond Lake as soon as the food chain recovered adequately to support them without compromising progress toward water quality goals. Annual stocking rates would be expected to increase as the food chain and water quality continued to recover.

**Education:** A number of educational activities would be used to reduce the likelihood of tui chub reintroduction into Diamond Lake potentially including: "angler stamps", interpretive signs and brochures, and boat inspections.

**Tui Chub Contingency Plan:** Because it is recognized that tui chub may be reintroduced, several actions designed to control tui chub populations would be implemented including: an extensive monitoring program to facilitate early detection of tui chub presence in the lake; stocking with predacious fish species following rotenone treatment and increasing the numbers of predacious fish if tui chub are detected; and using mechanical treatments such as netting and electro-shocking to limit tui chub population growth.

**Connected Actions:** A permit would be issued to Diamond Lake Resort to conduct maintenance and clean-up at the Resort Marina and the South Shore Pizza parlor dock while Diamond Lake is drawn down to eight feet below its normal level. This would involve the removal of accumulated sediment at the mouth of a tributary stream and the removal of obstacles/water hazards such as old cribbing, concrete blocks, pilings, etc. that are remnants of old boat docks and moorage.

**Appendix BB:** This appendix includes additional details on the monitoring and contingency plan and on activities designed to reduce tui chub reintroduction potential.

### **Alternative 3 (Put and Take Fishery)**

Alternative 3 was developed to respond to the fish stocking issue. This alternative is designed to provide a recreational fishery that minimizes potential effects of stocked fish on water quality in Diamond Lake. Alternative 3 is identical to the proposed action except that it would utilize a different fish stocking strategy to restock Diamond Lake following a rotenone treatment.

Alternative 3 includes all of the following components of the proposed action described in Alternative 2: *canal reconstruction, fall/winter lake draw down, mechanical fish removal and utilization, rotenone treatment, mechanical fish carcass removal and utilization, water management during the lake refill period, monitoring, education, and a tui chub contingency plan and a non-significant amendment to the 1990 Umpqua National Forest LRMP*. Connected actions proposed by the Diamond Lake Resort would also be permitted under this alternative. Appendix BB activities are also the same as under Alternative 2.

Additionally, under this alternative, ODFW would pursue approval for a change to the following strategy for restocking Diamond Lake with fish through the OFWC and the appropriate public process.

If approved by OFWC, management of the Diamond Lake recreational fishery would change from a Basic Yield Alternative under Oregon's Trout Plan to an Intensive Use Alternative<sup>1</sup>. In layman's terms this is a "put and take fishery" where legal sized fish are stocked in the spring and are harvested by anglers later in the same season.

Under this stocking strategy, it is estimated that ODFW would stock Diamond Lake annually with approximately 100,000-400,000 12-inch domesticated rainbow trout. Trout from this brood stock would not reproduce successfully in Diamond Lake, would not prey significantly on available food organisms, and the majority would not survive over winter. Diamond Lake would be stocked with domesticated trout in late spring following a fall rotenone treatment (since these fish would not require a robust existing food base). Stocking would occur periodically from late spring to early fall on an annual basis.

Subsequently, as part of the "tui chub contingency plan", legal or trophy sized predacious fish species (Eagle Lake rainbow trout, brown trout, or spring Chinook) would be introduced into Diamond Lake as soon as the food base recovered adequately to support them without compromising progress toward water quality goals. Ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), existing data and knowledge, annual fish monitoring data and applicable nutrient loading allocations provided in ODEQ's pending Total Maximum Daily Load (TMDL) publication would be used to determine appropriate numeric goals for all annual fish stocking and harvest post-project.

#### **Alternative 4 (Mechanical/Biological)**

Alternative 4 was developed to respond to the issues of fish stocking, non-target species, water quality, wetland ecology, and human health risks associated with rotenone use. In response to public comments on the DEIS, Alternative 4 was revised between draft and final to incorporate public recommendations designed to increase its potential effectiveness at meeting the purpose and need. This alternative was designed to minimize effects of a chemical treatment and associated lake draw down on resources while limiting/controlling the tui chub population. This alternative does not include a lake draw down so potential impacts to water quality and wetland ecology from a draw down are eliminated; and it does not include a chemical treatment so potential impacts to non-target species, water quality, and health risks from chemicals are eliminated. This alternative includes a modified fish stocking strategy designed to reduce the potential impacts of a recreational fishery on water quality in Diamond Lake.

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<sup>1</sup> Intensive Use--"...Waters managed for this alternative are apt to be near large population centers or attract intensive angler use because of easy accessibility or location of other water-oriented recreational facilities. Many of these waters support fisheries year-round. Many of these waters can be used heavily by anglers or for short periods (April, May, and June) and afterwards be used for sailboating, water skiing, swimming, and camping. Other waters can support fisheries year-round. Some of these waters are stocked with yearling rainbow trout on a regular basis. Guidelines which apply are:..." (OAR 635-500-0115)

Alternative 4 would use mechanical techniques in combination with predacious fish stocking to selectively harvest chub, disrupt chub spawning and increase predation on chub, with the objective of severely diminishing chub populations over time. Alternative 4 would include education and monitoring components similar to Alternative 2. Additionally, this alternative includes all of the following components:

**Annual Mechanical Harvest:** Following one year of equipment and technique testing and experimentation, mechanical fish harvest treatments would occur on an annual basis for six consecutive years utilizing a variety of commercial fishing tools/techniques determined to be most effective through an adaptive management process. A combination of active and passive commercial fishing methods would be used. Potential tools include: seine nets, trawl nets, cast nets, gill nets, lampara<sup>2</sup> and beach seines, custom-built traps, or other types of commercial nets, seines, and traps. A detailed implementation plan is included in Chapter 2. In general, fish harvest activities would likely occur for two months in June and July prior to and during the chub spawning period at Diamond Lake. Commercial fishing operations would only occur in certain portions of the lake at a given point in time and would be rotated to different portions of the lake during the two month period. Areas where commercial fishing was occurring would be closed to recreational angling. Commercial fishing would also occur annually for approximately one month in September in an effort to harvest chub as they move from the shallows into more open water within the lake. Mechanical fish harvest treatments would target reproductive age chub. The goal of these activities would be to harvest 90-95% (or more) of the reproductive-age chub annually, while attempting to maintain a biological control (predacious fish) on the tui chub population. It is expected that annual commercial fishing operations described above would be needed to effectively limit tui chub recruitment in Diamond Lake over time.

**Spawning Disruption:** In addition to the above activities, electro-fishing boats would be used during the peak chub spawning period to disrupt spawning in the shallow areas of the lake that have abundant aquatic macrophytes. Where vegetation and bottom contour are favorable, a beach seine would be used to capture spawning fish in shallow areas. Nets may also be deployed to exclude fish from favored spawning areas of the lake.

**Predacious Fish Stocking:** ODFW would pursue approval for a change to the following strategy for restocking Diamond Lake with fish through the OFWC and the appropriate public process. In general, Diamond Lake would be stocked annually with large predacious fish in sufficient numbers and of sufficient size/age classes to serve as potentially effective predators on the tui chub as well as to provide a recreational fishery. Enough catchable size trout would be released into the lake to support an improved recreational fishery. Specifically, if approved by OFWC, management of the Diamond Lake recreational fishery would change from a Basic Yield Alternative under Oregon's Trout Plan to either a Featured Species<sup>3</sup> or Trophy Fish Alternative<sup>4</sup>.

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<sup>2</sup> A lampara net is a type of open water seine with tapered ends and a relatively deep, loosely hung center section. The net is set in a circle around the fish school and the two ends are brought together capturing the fish in the middle (Nielsen and Johnson 1989)

<sup>3</sup> Featured Species and Waters—Management under this alternative emphasizes species or stocks that are uncommon or unique and waters that have historical benefit or potential for unique natural beauty, water quality, aesthetics or recreational capabilities

Oregon administrative regulations under the Basic Yield Alternative states: “The productive capacity of the waters in this alternative will be maintained or enhanced so that no net loss of natural fish production occurs. Problem waters<sup>5</sup> can be transferred into a higher priority alternative. Both the Featured Species and Trophy Fish alternatives are higher priority alternatives in the Oregon Trout Plan.

A Featured Species stocking strategy would include annual stocking with legal and/or trophy sized Eagle Lake rainbow trout. A Trophy Fish stocking strategy would include annual stocking with legal and/or trophy sized brown trout or Kamloops rainbow trout. Ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), existing data and knowledge, annual fish monitoring data and applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication would be used to determine appropriate numeric goals for annual fish stocking and harvest post-project. However, the following summarizes estimated fish stocking under this alternative:

**2005:** 15,000 - 20,000 two to four pound predacious trout or other predacious fish and 85,000 catchable to trophy size domestic rainbow trout;

**2006:** 15,000 - 20,000 two to four pound predacious trout or other predacious fish and 150,000 catchable to trophy size domestic rainbow trout;

**2007 - 2011:** 7,500 - 10,000 two to four pound predacious trout or other predacious fish and 230,000 catchable to trophy size domestic rainbow trout.

This alternative would use experimental stocking and adaptive management to select a species of predacious fish to be introduced into the lake in subsequent years to serve as predators on the tui chub.

**Contingency Plan:** It is expected that following 6 years of full scale mechanical removal (approximately 2011), the tui chub population in Diamond Lake would be greatly diminished. It is also acknowledged that annual tui chub removal and spawning disruption activities would be needed to effectively limit tui chub recruitment in Diamond Lake over time. Additionally, it is assumed that the likelihood of achieving or maintaining improvements in the water quality and recreational fishery in the long-term<sup>6</sup> under this alternative would be increased with annual implementation of the following contingency plan:

- Annual sampling and tui chub population modeling would occur to facilitate determination of the appropriate level and duration of tui chub removal activities necessary in a given year<sup>7</sup>. Population control measures are more

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<sup>4</sup> Trophy Fish—Certain waters are capable of producing large “bragging-size” trout

<sup>5</sup> Problem waters are not defined in the OARS however, according to ODFW personnel, the degraded water quality at Diamond Lake qualifies it as “problem water”.

<sup>6</sup> For the purpose of alternative comparison over a longer period of time, it is assumed that contingency plans for each alternative would be implemented for five additional years beyond the 7 year project lifetime. Economic estimates for these five years are included as a modification to the economic section of the FEIS.

<sup>7</sup> Monitoring results will be used to determine actual required level of effort. For analysis purposes, during contingency plan implementation, it is assumed that the level of mechanical removal would be reduced by about one third or one month each year during peak spawning. This is based on the assumption that

likely to be effective if low numbers of tui chub are maintained. Additionally, low numbers of tui chub must be maintained in order to sustain an improved recreational fishery without exceeding nutrient allocations for water quality.

- Annual stocking with large predacious fish of the size and species determined to be most effective at consuming tui chub would occur.
- Annual mechanical treatments including, but not limited to: netting, seining, trapping, electro shocking, and disruption of spawning would be used to limit tui chub population growth.

### **Alternative 5 (Modified Rotenone Treatment and Post-Treatment Fish Stocking)**

**Alternative 5 is the Forest Service's preferred alternative in the FEIS.** Alternative 5 was developed to respond to public comments on the Draft Environmental Impact Statement (DEIS) related to the rotenone treatment and the fish stocking strategy. This alternative would rely more on the use of the liquid rotenone formulation and it would target the upper range of recommended rotenone concentrations for use on chub-like species as compared to Alternatives 2 and 3. As such, Alternative 5 is predicted to increase the likelihood that a rotenone treatment would kill 100% of the tui chub present in the lake at the time of treatment. Alternative 5 also reflects the post-treatment fish stocking strategy described by ODFW after publication of the DEIS (Appendix AA - Letter 77 and Appendix D - August 19, 2004, Preliminary Stocking Plans for Diamond Lake for FEIS Alternatives).

Alternative 5 includes all of the following components of the proposed action described in Alternative 2: *canal reconstruction, fall/winter lake drawdown, mechanical fish removal and utilization, non-significant amendment to LRMP, mechanical fish carcass removal and utilization, water management during the lake refill period, monitoring, education, and a tui chub contingency plan.* Connected actions and Appendix BB activities are also the same as described for Alternative 2. Additionally, Alternative 5 includes the following components:

***Modified September Rotenone Treatment:*** Both powdered (Pro-Noxfish®) and liquid (Noxfish®) formulations of the fish toxicant rotenone would be applied to Diamond Lake in September when water temperature and chemistry reached conditions considered optimal for achieving a complete fish kill (likely in mid September). Under Alternative 5 liquid rotenone would be applied to shallow waters less than about 20 feet in depth. Based on a predicted water volume of 13,300 acre-feet following the drawdown, it is estimated that approximately 8,900 gallons of liquid rotenone would be used in the lake. The shallow waters of Diamond Lake are dominated by aquatic plants (macrophyte beds) that provide optimal habitat for tui chub. The use of liquid rotenone in these shallow areas was suggested by expert personnel from the California Department of Fish and Game, to increase the likelihood of full chub eradication. The liquid formulation is considered more effective in such environments because it disperses more quickly and thoroughly than the powder form.

Powdered rotenone would be applied to the rest of the lake water, greater than 20 feet. Based on a predicted water volume of 31,000 acre-feet following the drawdown, it is estimated that approximately 168,000 pounds of powdered rotenone would be

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knowledge of chub behavior and preferred habitats would be refined such that a one month effort is adequate to control rate of population growth.

used in the lake. Powdered rotenone is the recommended formulation for the deeper areas of the lake because it would disperse adequately and is less expensive.

Alternative 5 would treat Silent and Short Creeks exactly the same as Alternatives 2 and 3. All other aspects of rotenone transport, storage, application, and safety management would be the same as described for Alternatives 2 and 3.

**Modified Fish Stocking Strategy:** Under this alternative, ODFW would restock Diamond Lake with fish following the rotenone treatment as described in Director Lindsay A. Ball's, July 2, 2004 letter (Letter 77 in Appendix AA ) and in ODFW's August 19, 2004 memo, "Preliminary Stocking Plans for Diamond Lake for FEIS Alternatives"(Appendix D). The following summarizes ODFW's proposed fish stocking strategy based on a fall 2006 rotenone treatment:

- ODFW would continue to manage for both maintenance and experimental fisheries through 2008, provided a rotenone treatment is successfully completed in 2006.
- ODFW would design and recommend a post-treatment stocking strategy that best meets the goals of the lake based on the following environmental indices described in Eilers (2003a), "An Ecologically-Based Index for Guiding Salmonid-Stocking Decisions in Diamond Lake, Oregon": pH, dissolved oxygen, chlorophyll *a*, phytoplankton biovolume, Secchi disk transparency, percent rotifers, percent edible zooplankton, and percent amphipods in the zoobenthos.
- Actual stocking numbers could vary based on a number of factors including availability of eggs/fish, facility capacity, actual costs, available funding, monitoring results and management decisions; however, the following describes approximate stocking strategies from 2005 - 2011, based on ODFW's current budget (ODFW 08-19-2004, Memo):

**2005:** 24,000 catchable-size trout; 18,000 put-and-take-trout and 3,000 trophy-sized trout;

**2006:** 24,000 catchable-size trout (early season only);

**2007<sup>8</sup>:** 50,000-100,000 fingerlings and 10,000-25,000 catchable-size predacious trout;

**2008<sup>8</sup>:** 100,000-200,000 fingerlings and 10,000-25,000 catchable-size predacious trout;

**2009<sup>8</sup>:** 100,000-300,000 fingerlings and 10,000-25,000 catchable-size predacious trout;

**2010-2011<sup>8</sup>:** 200,000-300,000 fingerlings and 10,000-25,000 catchable-size predacious trout.

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<sup>8</sup> According to ODFW's July 2, 2004 letter and personal communications with Dave Loomis in the years 2007- 2010, it is possible that a minimum of 50,000 put-and-take-size trout would also be stocked in Diamond Lake if sufficient additional funding is secured. However, due to the high level of uncertainty these additional fish were not included in ODFW's subsequent August 19, 2004 memos and thus are not included in the alternative description or elsewhere in the document.

- In compliance with their statutory authority and related policies and plans ODFW would design and implement an ecologically sound stocking strategy. OFWC would enter into a public review of the Diamond Lake Management Plan when sufficient information is available regarding the fishery that can be maintained in the long term. This decision process would take into consideration the environmental, biological, economic, and community values of the people of Oregon.

Under this alternative, by law and by mutual agreement between the USFS, ODFW and ODEQ, applicable nutrient loading allocations provided in ODEQ's pending TMDL publication would be used to determine appropriate numeric goals for annual fish stocking following a rotenone treatment. ODEQ's role and commitment to participate and assist are documented in Letter 78, Appendix AA. In compliance with the TMDL's beneficial uses, appropriate stocking numbers and timing of fingerling size fish releases would not occur post-treatment until zooplankton levels and community composition fall within agreed ranges for supporting water quality recovery and the ecological health of the lake.

#### **BEST MANAGEMENT PRACTICES, MANAGEMENT REQUIREMENTS, MITIGATION MEASURES, AND MONITORING**

Requirements relating to best management practices, management requirements, mitigation measures, and monitoring will be implemented for all alternatives to meet laws, regulations, and policies. In most cases they have been designed to reduce potential environmental effects. General Water Quality Best Management Practices are prescribed to protect the beneficial uses of water and to address water quality objectives as required by the Federal Clean Water Act and the 1990 Umpqua National Land and Resource Management Plan, as amended.

### **CHAPTER 3 – AFFECTED ENVIRONMENT & ENVIRONMENTAL EFFECTS**

This section of the Environmental Impact Statement presents the scientific and analytic basis for the comparison of alternatives. The effects are discussed in terms of social and environmental changes from the current situation and include quantitative assessments where possible, as well as qualitative assessments. For each aspect of the affected environment, direct and indirect impacts from the proposed alternatives, as well as cumulative impacts from past, proposed, present, and foreseeable activities are evaluated. This portion of the summary highlights topics covered in the FEIS.

#### **AQUATIC ENVIRONMENT**

Affected aquatic environments discussed in the FEIS include important factors such as: lake ecology; water quality; stream ecology; zooplankton; phytoplankton and primary productivity; benthic organisms; fish and fish habitat; and groundwater.

#### **TERRESTRIAL ENVIRONMENT**

Affected terrestrial environments discussed in this FEIS include such factors as: upland vegetation, noxious weeds, rare plants, former survey and manage plants/fungi, and

wildlife including former survey and manage wildlife, sensitive, threatened and endangered species and management indicator species.

## **SOCIAL ENVIRONMENT**

Within the realm of the social environment, human health, recreation and economics are discussed in detail. All three of these aspects of the social environment were identified as non-significant issues identified in the FEIS.

Other factors evaluated in this section include scenery and visual quality; unavoidable adverse impacts; irreversible and irretrievable commitments of resources; short term and long term productivity; public and worker safety; cultural resources; unique habitats; wetlands and floodplains; prime farmlands, rangelands, forestlands or parklands; potential or unusual expenditures of energy; conflicts with plans or policies of other jurisdictions; consumers, civil rights, minority groups, and women; and environmental justice.

Table S-1 summarizes the effects of implementing the alternatives on selected aspects of the terrestrial, aquatic, and social environment. This summary greatly simplifies expected effects for the lifetime of this project (about 2005-2011). In order to have a full understanding of the potential risks, uncertainties, and short and long-term expected impacts and tradeoffs associated with each of the alternatives, it is necessary to read Chapter 3 of the FEIS. For example, Chapter 3 documents potential effects to resources associated with tui chub's return to Diamond Lake in the future under Alternatives 2, 3, and 5; the assumptions and uncertainty associated with the potential long-term effectiveness of Alternative 4; and the associated contingency plans which are designed to improve long-term outcomes (2012 and beyond) for all action alternatives.

Table S-1. Effects of Alternative Implementation on Selected Factors.

Selected Factor	Indicator	Unit of measure	Alt. 1 No Action	Alt. 2 Rotenone and put-grow-take fishery	Alt. 3 Rotenone and put and take fishery	Alt. 4 Mechanical and Biological Control of Chub	Alt. 5 Modified Rotenone and Fish Stocking
Water Quality	Algae Toxin Production & Probability of Annual Lake Closures in 2011	High, Low, Moderate to Lower	High	Low	Low	Moderate	Low
	Risk of Well Water Contamination w/Rotenone	High, Moderate, low to None	None	Low to none with mitigation	Low to none with mitigation	None	Low to none with mitigation
Recreational Fishery	Expected Tui Chub Population	High, Moderate, None	High	None	None	Moderate	None
	ODFW Fish Stocking Projections	Projected numbers & types/size of fish stocked annually (2008-2011)	24,000 8-inch predacious fish (Eagle L. rainbow, brown trout or chinook salmon)	200,000-300,000 trout fingerlings & 10,000 8-10-inch predacious trout/salmon	*24,000 8-inch Eagle Lake rainbow & 200,000-400,000 12-inch domesticated rainbow trout	*230,000 10-16-inch domesticated trout & 7,500 - 10,000 2-4 lb predacious fish (Eagle Lake, Brown or Kamloops trout)	100,000-300,000 trout fingerlings & 10,000-25,000 8-10-inch predacious trout/salmon
	ODFW Fishing Success Projections	Estimated Yearly Catch (in 2008-2011)	10,000	100,000 to 200,000	80,000 to 160,000	55,000 to 72,000	100,000 to 200,000
Lake Ecology	Zooplankton and Aquatic Invertebrate Populations	Population Trends	Remain depressed with low species diversity	Short-term drop, returning to pre-chub conditions	Short-term drop, returning to pre-chub conditions	Limited increase in populations and species diversity	Short-term drop, returning to pre-chub conditions
Wetland Ecology	Wetlands Impacts	Acres Temporarily Dewatered	0	135	135	0	135
Non-Target Species	Bald Eagles	Effects determination for Endangered Species Act	Likely to adversely affect (due to continued algae toxins)	Likely to adversely affect (due to temporary prey base loss)	Likely to adversely affect (due to temporary prey base loss)	Not likely to adversely affect (due to limited prey base & disturbance impacts)	Likely to adversely affect (due to temporary prey base loss)
	Coho Salmon	Effects determination for Endangered Species Act	Not likely to adversely affect	Not likely to adversely affect	Not likely to adversely affect	Not likely to adversely affect	Not likely to adversely affect

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Selected Factor	Indicator	Unit of measure	Alt. 1 No Action	Alt. 2 Rotenone and put-grow-take fishery	Alt. 3 Rotenone and put and take fishery	Alt. 4 Mechanical and Biological Control of Chub	Alt. 5 Modified Rotenone and Fish Stocking
Human Health	Exposure to either algae or rotenone toxins	Exposure of general public	Hundreds of water recreationists potentially exposed to algal toxins annually	Limited exposure to either toxin (due to mitigation for rotenone & substantially lowered algae toxins)	Limited exposure to either toxin (due to mitigation for rotenone & substantially lowered algae toxins)	No rotenone exposure. Hundreds of water recreationists potentially exposed to algal toxins annually	Limited exposure to either toxin (due to mitigation for rotenone & substantially lowered algae toxins)
Recreation	Availability of water sports activities	Amount and period of user displacement	Long-term displacement of water recreationists (due to poor water quality and poor fishing)	18 month limited use period (due to draw down and associated rotenone activities)	18 month limited use period (due to draw down and associated rotenone activities)	1/3 of lake unavailable for use in June, July, and September every year (due to annual fish removal activities)	18 month limited use period (due to draw down and associated rotenone activities)
Economics	Sales Estimates for the year 2011 only	Dollars generated from sales to local and non-local anglers	\$376,251	\$3,762,513	\$3,010,010	\$2,069,382	\$3,762,513
	Implementation Costs Includes ODFW Fish Stocking	Estimated cost to implement in dollars	\$830,600	\$2,866,000 - \$3,091,000	\$7,098,000 - \$7,323,000	\$4,984,600 - \$6,029,600	\$3,392,500 - \$3,667,500

**CHAPTER 4 – CONSULTATION WITH OTHERS**

Over 400 people participated in the planning process by attending open houses, public forums, meetings, field trips, or by submitting written comments. Four regulatory agencies were consulted including NOAA Fisheries, US Fish and Wildlife Service, State Historic Preservation Office, and Oregon Department of Environmental Quality. Three Indian Tribes were notified of the project including The Cow Creek Band of Umpqua Tribe of Indians, Confederated Tribe of Grand Ronde of Indians, and the Confederated Tribe of Siletz Indians. The Draft EIS was sent to 21 Federal Agencies, 16 State Agencies in Oregon and to about 120 individuals and groups who requested a copy.

The public involvement and scoping process used for the Diamond Lake Restoration Project is summarized earlier in this Summary document.

**CHAPTER 5 – RESPONSE TO COMMENTS**

Chapter 5 summarizes the Forest Service’s response to public comments on the DEIS and describes public involvement that followed the end of the comment period.

The 45-day Public Comment period for the Diamond Lake Restoration Project Draft Environmental Impact Statement (DEIS) opened on April 2, 2004 and closed on May 17, 2004. The public was asked to give comment on Alternative 3 of the DEIS. Seventy-six timely comments letters were received. Two additional letters were provided by ODFW and ODEQ, the Cooperating Agencies, at the request of the Forest Service after the comment period closed. These two letters are reproduced in their entirety at the end of Appendix AA.

In April 2004, the Forest Service and members of the Diamond Lake Work Group produced a project update for broad distribution to the public. The update described project alternatives, solicited public comments on the DEIS and documented our willingness and availability to meet with members of the public regarding the project. Approximately 30,000 copies of the project update were distributed via publication in area newspapers, postal mailings, or direct distribution from state, federal, and private offices. In addition, in late April 2004, phone or email contact was made with thirty-eight representatives of area interest groups/organizations that had expressed interest in the project during previous scoping.

Table 72 in Chapter 5 summarizes all public comments on the DEIS. Public comments ranged a broad spectrum of opinions, encompassing both support and opposition (with rationale) for each of the action alternatives. One commenter supported no action. Many commenter's expressed: frustration with management agencies for lack of timely action in restoring the lake; opinions regarding fish stocking; concerns over long-term water quality; and requests for additional information or clarification.

Chapter 5 also includes public involvement following the comment period. In response to comments on the DEIS by ODFW (Cooperating Agency), members of the public, and the IDT, a fifth alternative was designed for incorporation into the FEIS. This alternative utilizes a modified rotenone treatment and fish stocking strategy. Potential effects of Alternative 5 are very similar to Alternatives 2 and 3 and either of these alternatives could have been modified to include changes proposed under Alternative 5. However, due to the high level of public interest in this project and for purposes of full disclosure, the Forest Service chose to include and analyze Alternative 5 as a separate alternative in the FEIS. Information relevant to Alternative 5 was distributed to the public and a public meeting was held at the Douglas County Library on August 10, 2004. On September 20, 2004 the Diamond Lake Work Group and IDT announced and held an additional public meeting to discuss Alternative 5, completion of the FEIS, and concerns of the public regarding delays in the project. On October 12, 2004, the Forest Service received a letter from Umpqua Watersheds, Umpqua Valley Audubon, and the Oregon Natural Resources Council (ONRC) requesting consideration of a sixth alternative for incorporation into the FEIS. Alternative 6 was very similar to the existing Alternative 4. Per the request of these groups, the Forest Service met to discuss their proposal with them on October 20, 2004. A public meeting to discuss Alternative 6 was held on October 25, 2004. At this meeting, Jim Caplan decided to incorporate agreed upon aspects of Alternative 6 into DEIS Alternative 4. On October 28, 2004, the Forest Service and ODFW again met with Alternative 6 proponents to refine and finalize Alternative 4. ONRC representatives did not attend any of the meetings documented above.

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